

ORDER APPROVING AMENDMENT No. 8
to
SITE CERTIFICATE for NORTHWEST NATURAL GAS
MIST UNDERGROUND GAS STORAGE FACILITY

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**BEFORE THE ENERGY FACILITY SITING COUNCIL
OF THE STATE OF OREGON**

In the Matter of the Application by)	
Northwest Natural Gas Co.)	FINAL ORDER
for Amendment No. 8 to its)	APPROVING
Site Certificate for the Mist Underground)	AMENDMENT 8
Natural Gas Storage Facility)	

I. Introduction and Background

On September 30, 1981, the Energy Facility Siting Council ("Council", or "EFSC") issued an Energy Facility Site Certificate to the Oregon Natural Gas Development Corporation ("ONG") for an underground natural gas storage facility at the Mist site, near Mist, Oregon, in Columbia County. ONG was a wholly owned subsidiary of Northwest Natural Gas Company ("NWN").

The Council has amended the Site Certificate seven times. Amendment 1, issued in October 1987, extended the deadline for construction and made minor modifications to other sections of the Site Certificate. Amendment 2, issued in August 1988, added a monitoring well. Amendment 3 issued in September 1990, allowed NWN to replace some injection/withdrawal wells. In 1990 ONG assigned the site certificate to its parent company, NWN.

Amendment 4, which EFSC approved in July 1997, allowed expansion of the site boundary to include the Calvin Creek storage area, development of related and supporting surface facilities associated with new underground storage reservoirs in the Calvin Creek Storage Area, and upgrading of related and supporting surface facilities at NWN's Miller Station.

Amendment 5, which EFSC approved in March 1998, made the current EFSC rules at OAR 345-027-0050 through 0080 applicable to the facility. These rules govern the process for site certificate amendments.

Amendment 6, approved on March 31, 1998, allowed further storage development in the Calvin Creek area, on land within the site as previously enlarged by amendment 4.

Amendment 7, approved on November 17, 2000, increased the permitted daily throughput to 245 million cubic feet per day (mmcf). The amendment did not authorize construction of any new equipment or facilities, but it removed all operating restrictions on existing equipment. This meant that any further increases in storage capacity or throughput would necessitate the installation of new facilities or equipment.

On August 17, 2001, NWN requested amendment 8, which increased the permitted throughput and authorized construction of new equipment on land already within the site.

II. Description of the Facility and Amendment 8

A. Description of the Facility

The Mist underground storage facility provides NWN with a means of balancing relatively constant pipeline gas supplies with widely fluctuating market requirements. Gas is injected into storage during off-peak periods and is withdrawn when market demand exceeds available supplies from other sources. Underground reservoir storage requires suitable underground geological conditions in a specific geographic area. These conditions occur in depleted oil or gas pools. NWN identified the Mist site as one such area in the late 1970's. The site is located in rural Columbia County in parts of sections 2,3,4,10 and 11 of Township 6 North Range 5 West, Willamette Meridian.

The underground natural gas storage operation consists of a natural gas production field, retrofitted to inject gas back into the ground and withdraw it on a cyclical basis. Some gas always remains in the reservoir, to maintain operating pressure. That is known as "cushion gas". The remainder of the reservoir's capacity is used to inject and withdraw gas relatively rapidly, to meet market needs.

In addition to the naturally occurring underground gas pools, the facility includes related and supporting surface facilities. Most of these are located at NWN's Miller Station, which includes compressors, piping, control, dehydration and auxiliary systems. Other surface facilities related to the underground gas storage include gathering lines and facilities for NWN maintenance and operations staff.

The site for the Mist underground storage facility consists of Bruer/Flora and the Calvin Creek area. Bruer/Flora is located north of the Nehalem River, near Miller station. It was originally permitted in 1981. The Calvin Creek area is located two and one-half miles south of Miller Station, and was permitted in Amendment 4 in 1997. Twin 16-inch pipelines cross the Nehalem River and connect the Calvin Creek area with Miller Station.

B. Description of Amendment 8

Amendment 8 increases the permitted daily throughput from 245 mmcfd to 317 mmcfd. The increase will involve the installation of new metering facilities, new interconnect piping to the South Mist and North Mist pipelines, and a new gas-turbine driven compressor. All the above equipment installations will be at Miller station.

The new compressor proposed in the request for amendment 8 is rated at up to 7800 horsepower. Adding this to the 8200 hp currently in operation, this brings the total compression capability to 16,000 hp.

NWN also is authorized to install one new injection/withdrawal well at an existing well site that was developed under Amendment No. 6. NWN does not propose any new gathering lines.

III. Amendment Process and Procedural History

A. Amendment Process

The EFSC's amendment rules, OAR Chapter 345, Division 27 applied to this request for amendment. EFSC applied its standards in effect on October 26, 2001 to this amendment request. EFSC also finds compliance with permitting requirements of other state agencies, other than permits delegated to another agency by the federal government.

B. Procedural History

NWN submitted its Application on August 17, 2001.

Public Notice

On August 17, 2001 the Oregon Office of Energy (OOE) sent written notice of the Application to the EFSC general mailing list and to persons who have specifically requested notification of all Council actions related to the Mist storage facility. Because there is no change to the site, notice to adjacent property owners was not required pursuant to OAR 345-027-0060(1)(g).

The notice stated that comments from the public were invited, and stated that the deadline for public comment was September 15, 2001. OOE received no comments

Notice to State Agencies and Affected Local Governments

On August 17, 2001 OOE sent copies of the Application to the agencies and local governments listed in OAR 345-020-0040(1). OOE requested comments from agencies and affected local governments by September 15, 2001.

Proposed Order and Public Comment Period

On September 21, 2001 OOE issued a Proposed Order recommending approval of the amendment. OOE issued notice of the Proposed Order to persons on the Council's general mailing list, state agencies and affected local governments as listed in OAR 345-020-0040(1), and to the list of persons who have specifically requested notice of Council actions regarding the Mist facility. The notice stated that comments on the proposed order, including any request for contested case, must be submitted by the close of business on October 22, 2001.

No members of the public commented. OOE did receive a comment on the Proposed Order from NWN on October 16, 2001. These comments are addressed in Section V of this Final Order.

IV. Findings and Conclusions

A. Compliance with EFSC Standards in OAR 345 Division 22

1. OAR 345-022-0010 Organizational, Managerial and Technical Expertise

Under Part (1) of this standard the Council must determine whether the applicant has the organizational, managerial and technical expertise to construct and operate the facility. To conclude that the applicant has the organizational, managerial and technical expertise to construct and operate the proposed facility, the Council must determine that the applicant has

"a reasonable probability of successful construction and operation of the facility considering the experience of the applicant, the availability of technical expertise to the applicant, and, if the applicant has constructed or operated other facilities, the past performance of the applicant, including but not limited to the number and severity of regulatory citations, in constructing or operating a facility, type of equipment, or process similar to the proposed facility."

Part (2) of this standard allows the applicant to take credit for any ISO-certified programs that may apply. None does in this case.

Part (3) of the standard states that:

"if the applicant does not itself obtain any state or local government permit or approval for which the Council would ordinarily determine compliance but instead relies on a permit or approval issued to a third party, the Council, to issue a site certificate, must find that the third party has, or has a reasonable likelihood of obtaining, the necessary permit or approval, and that the applicant has, or has a reasonable likelihood of entering into, a contractual or other arrangement with the third party for access to the resource or service secured by that permit or approval."

Discussion: NWN last applied for amendment to its Mist site certificate in 2000. Their application for amendment 8 describes essentially the same qualifications that they described in previous amendment requests. Therefore the findings for amendment 7 regarding this standard still apply. The following excerpt from the Council's November 2000 order approving amendment 7 states:

"NWN is a 140 year old company whose core business is the local distribution of natural gas. NWN or its former subsidiary ONG have operated the Mist underground storage facility since 1988. The requested amendment would not allow NWN to construct a new type of facility, but would allow expansion of facilities that are already operating. The company personnel who have been managing the existing storage facility will continue to operate the expanded facility. The individuals responsible for the design and construction of the expanded facility are the same individuals responsible for the Calvin Creek project in 1997. Inspections by OOE staff indicate that NWN complied with site certificate conditions in implementing the Calvin Creek project.

The record reveals no regulatory citations. NWN states that it has received no notices of violation for occupational safety or any regulatory citations from DOGAMI in connection with its underground storage. Written comments by Oregon Public Utilities Commission ("OPUC"), indicate that NWN complies with construction regulations for gas pipelines as required by Title 49 Part 192 of the Code of Federal Regulations."

NWN has identified, and we are aware of, no third party permits or ISO programs. Therefore sections (2) and (3) of this standard do not apply.

Conclusion: The proposed amendment would authorize the installation and operation of equipment that is essentially identical to what is already there. Based on NWN's prior experience constructing and operating the Mist Storage Facility, its successful completion of the Calvin Creek expansion in 1997 and the Phase 3 South Mist Feeder extension in 1999, the Council finds reasonable assurance that NWN can successfully construct, operate and retire the facility. No new conditions are required.

2. OAR 345-022-0020 Structural Standard

This standard requires that:

(1) The applicant, through appropriate site-specific study, has adequately characterized the site as to seismic zone and expected ground motion and ground failure, taking into account amplification, during the maximum credible and maximum probable seismic events; and

(2) The applicant can design, engineer, and construct the facility to avoid dangers to human safety presented by seismic hazards affecting the site that are expected to result from all maximum probable seismic events. As used in this rule "seismic hazard" includes ground shaking, landslide, liquefaction, lateral spreading, tsunami inundation, fault displacement, and subsidence;

(3) The applicant, through appropriate site-specific study, has adequately characterized the potential geological and soils hazards of the site and its vicinity that could, in the absence of a seismic event, adversely affect, or be aggravated by, the construction and operation of the proposed facility; and

(4) The applicant can design, engineer and construct the facility to avoid dangers to human safety presented by the hazards identified in section (3).

Discussion: The standard has site characterization requirements and design and construction requirements, considering both earthquake and non-earthquake hazards.

Site Characterization: The NWN proposal consists primarily of new equipment installation at Miller Station. A new compressor would be installed adjacent to the compressor that NWN installed in 1997, as authorized by Amendment 4. Other equipment such as dehydration equipment, piping connections and metering upgrades would be also similar to new equipment that was installed under Amendment 4.

For this reason, NWN relied on the geotechnical work that was done in support of EFSC's findings of compliance with the structural and soils standard for Amendment 4 in 1997. NWN's geotechnical consultant, GeoEngineers, reviewed the studies submitted in support of amendment 4 and concluded that the Miller Station improvements associated with this amendment do not change any of the conclusions reached in the site characterization for Amendment 4.

Sections (1) and (2) of this standard require characterization and design for seismic hazards. The Oregon Building Code, 1993 Edition, designates the site as Seismic Zone 3. The code provides design criteria for structures in this zone based on the ground acceleration and likely amplification or shaking that may occur during an earthquake. NWN's geotechnical consultant, GeoEngineers, reviewed the 1997 studies and concluded that "****the seismicity and seismic zone at Miller Station are unchanged since the report was written****" (Request for Amendment 8, Exhibit 3). The seismic zone factor for zone 3 remains .30, as it was in 1997. The Council therefore concludes that NWN has adequately characterized the site in terms of seismic zone and ground response during the maximum credible event and maximum probable events.

Section (2) contains a design requirement for seismic hazards. GeoEngineers reviewed the original seismic design recommendations that applied under amendment 4 and issued new recommendations in a September 18, 2001 report ("EFSC Structural Standard Information, Miller Station Gas Compression Facility, Mist Oregon"). In this report they concluded that:

"****previous studies have shown that the anticipated peak ground acceleration caused by the maximum probable event is less than the UBC seismic zone factor, and that unusual ground motion amplification is not expected. Consequently, conventional UBC seismic design exceeds the Standard. Table 2 summarizes the appropriate seismic design parameters for Miller Station."

Table 2

Seismic Design Parameters

Parameter		Value
Seismic Zone Factor	Z	0.30
Soil Profile Type	S	S _c
Seismic Coefficient	C _a	0.33
Seismic Coefficient	C _v	0.45

The Oregon Department of Geology (DOGAMI) also reviewed NWNs' amendment request and identified no concerns (personal communication on September 12, 2001 from Jon Hofmeister, DOGAMI to Adam Bless, OOE)

Section (3) requires consideration of geological and soils hazards that could happen in the absence of a seismic event. Although the EFSC structural standard did not contain this section in 1997, Section 5 of Exhibit 10 of NWN's application for amendment 4 considers non-seismic geological and soils hazards. As noted above, NWN current geotechnical consultant, GeoEngineers, reviewed that 1997 study in light of this proposed amendment and concluded that its conclusions and recommendations remain valid. Soil conditions at Miller station have not changed in that time, and the foundation work needed for the proposed equipment additions are similar to the work done for the 1997 upgrades.

Section (4) of the standard is a design requirement for non-seismic hazards. In its September 18, 2001 report to NWN, GeoEngineers made specific recommendations regarding earthwork, fill placement and compaction, slope inclinations, foundation support, bearing capacity, lateral resistance and mat foundations. With these recommendations incorporated into the amendment as conditions, the amendment meets section (4).

Conclusion: The Council finds NWN has adequately characterized the site in terms of seismic zone, expected ground response during maximum credible seismic events, and non-seismic hazards. NWN can design and construct the modifications authorized by amendment 8 to avoid potential dangers presented by seismic and non-seismic hazards affecting the site. The Council will add the design and construction recommendations in the GeoEngineers September 18, 2001 report as conditions for this amendment 8.

3. 345-022-0022 Soil Protection

Under this standard the Council must find that:

“the design, construction and operation of the facility, taking into account mitigation, is not likely to result in a significant adverse impact to soils including but not limited to erosions and chemical factor such as salt deposition from cooling towers, land application of liquid effluents and chemical spills.”

Discussion: For the proposed upgrades at Miller Station, NWN relied on studies that they submitted in the 1997 request for Amendment 4. EFSC's final order approving Amendment 4 states that:

“Impacts at Miller station will not be significant because the station is already an industrial site, and the planned equipment locations are already covered by crushed rock. NWN has committed to adding additional crushed rock where there will be heavy traffic. Dames & Moore has provided detailed recommendations for the earthwork associated with Miller Station improvements, (Exhibit 11, Section 7) including recommendations for excavation, fill placement and compaction, fill suitability, slope inclinations, subgrade preparation and protection, and dewatering. Dames & Moore provided additional recommendations concerning foundation support, lateral earth pressures, mat foundations, seismic design parameters, and dynamic load considerations. These recommendations will prevent significant adverse impact on soils at Miller Station.”

The new equipment proposed for amendment 8 is similar to that installed for amendment 4. The new compressor would require new foundation work and some earthwork, but that work is similar in nature to the work done in 1997. The soil type and description of the conifer forest surrounding the Miller Station site is not changed from what is described in Exhibit 12 of the amendment 4 application. The soil at the Miller Station site is covered with crushed rock.

In November 2000 the Council modified this standard to include impacts from chemical spills, effluents, cooling towers and other chemical factors. The proposed amendment meets these provisions because there is no land application of effluent and no cooling towers. Where chemicals are used or stored, there is secondary concrete containment. Impact to the soil during the retirement of the facility will be limited to the area already disturbed. There is no impact to any agricultural soils.

Conclusion: The conditions recommended above for the Council's Structural standard would apply to this standard as well. With these conditions, the Council find that the design, construction and operation of the equipment proposed in amendment 8 are not likely to result in significant adverse impacts to soils.

4. 345-022-0030 Land Use

Under this standard, the Council must determine whether the facility complies with the statewide planning goals adopted by the Land Conservation and Development Commission. NWN has elected to address this standard by obtaining a land use determination directly from Columbia County.

Discussion: The amendment would authorize the installation and operation of new compression and metering equipment at the existing Miller Station, and a new injection/withdrawal well at an existing well site. In 1997 Columbia County reviewed Amendment 4 for compliance with county land use requirements. At that time, NWN obtained the necessary land use approvals directly from the County under ORS 469.504(1)(a).

In an August 10, 2001 letter from Peter Mostow of Stoel-Rives LLP to Glenn Higgins of Columbia County Land Development Services, NWN described the amendment as follows:

“The main change will be adding a new compressor unit within an existing building (the building, along with an existing compressor, was permitted in your file CU 53-96). The size, height and external appearance of the building will not be modified. In order to allow the rest of Miller Station to accommodate the increased compression capacity, related upgrades will include the addition of a high-capacity electronic natural gas meter and replacement and addition of certain above-ground natural gas pipes. All of these modifications will occur within the already fenced, graded and gravelled Miller Station site. No new buildings, fences or landscaping are proposed.”

In his reply to Mr. Mostow dated August 14, 2001, Mr. Higgins stated that the 1997 permits would, in the County’s view, encompass the modifications NWN is now seeking. Mr. Higgins noted that NWN is not proposing new buildings and the use of the property is remaining the same. He therefore concluded that no new land use applications are required.

Conclusion: The Council finds that its Land Use standard is met with no additional conditions required.

5. 345-022-0040 Protected Areas

This standard prohibits the siting of an energy facility in any of the protected areas listed in OAR 345-022-0040(1). The council must find that the design, construction and operation of the facility located outside these areas is not likely to result in significant adverse impact to any listed protected area.

Discussion: The Mist facility and proposed expansion are not located in a listed protected area.

The site for this proposed amendment is not changed from the site as permitted under Amendment 6. Moreover, EFSC has not added any new protected areas to the list of protected areas in OAR 345-022-0040. In the order approving Amendment 6, the Council stated:

“The nearest listed protected area is an Oregon State University research forest located about five miles northwest of the storage facility. All other protected areas are more than ten miles from the storage facility. The facility's most visible feature is the Miller Station, and no significant changes to Miller Station are proposed, beyond what was permitted by Amendment #4 in 1997***

***The impacts of construction (such as noise and land disturbance) will be confined to the immediate vicinity of Miller Station and the sites of the new gathering lines, or will be short-term and of a small magnitude (such as construction-related traffic). For these reasons, construction would not adversely affect any protected area. Likewise, operation of the expanded facility would not change certain impacts (such as water consumption and wastewater generation at Miller Station) while other impacts (such as noise from compressor operation and maintenance of clear pipeline rights-of-way) would be confined to the immediate area and would not affect even the closest protected area.”

The construction and operational characteristics for this proposed amendment are the same as those we observed for the Miller Station equipment upgrades authorized under Amendment 4. The nearest two Protected Areas (the OSU research forest located 5 miles away and the Jewell Wildlife Refuge located 12 miles away) are also the same as in the previous amendment. Therefore, the Council’s prior conclusions regarding construction impacts remain appropriate.

However, the new compressor would increase air emissions slightly. Oregon Air Quality Regulations are designed to protect Class I areas as well as Scenic Areas in the State. Under these regulations small or minor sources are not required to demonstrate compliance as an individual source. Even with the addition of the new turbine, DEQ has still classified Miller Station as a minor source for air quality permitting.

DEQ first issued the Miller Station air quality permit in 1987. The permit limited emissions to 125 tons per year (124 tons NO_x and 1 ton SO_x). At the time, the compressors were reciprocating engines. NWN has requested a permit update from DEQ. The updated permit will allow 78 tons per year as opposed to the 125 originally allowed. The 78-ton figure includes the existing compressors and the new compressor proposed in amendment 8. Based on source testing for the existing compressors and manufacturer's specifications for the new one, NWN estimates that actual emissions will be below 78 tons, even with the new compressor proposed by amendment 8. The emissions are lower than what was originally permitted because the new turbine driven compressors are cleaner than the reciprocating engines installed in 1987. Therefore, the Council does not expect the installation and operation of new turbine compressors to adversely affect visibility in protected areas.

Conclusion: Neither the site nor the list of Protected Areas has changed since amendment 6. The Council finds the modifications authorized by amendment 8 are not likely to have an adverse impact on any protected areas listed in this standard. No new conditions are required.

6. 345-022-0050 Financial Assurance

To issue a Site Certificate, the Council must find that the applicant has a reasonable likelihood of obtaining a bond or comparable security, satisfactory to the Council, in an amount adequate to restore the site if NWN:

- (1) Begins but does not complete construction of the facility; or
- (2) Permanently closes the facility before establishing a financial mechanism or instrument, satisfactory to the Council that will assure funds will be available to adequately retire the facility and restore the site to a useful, non-hazardous condition.

Discussion: This standard was not in effect when EFSC granted the original Site Certificate. In reviewing this amendment request we consider the effect the proposed expansion would have on NWN's ability to procure funds for site restoration.

NWN estimates that the restoration cost attributable to amendment 8 will be approximately \$400,000 in 2001 dollars. The application states that this would be offset by the salvage value of the equipment, which NWN estimates at one million dollars. While the Council concurs that there could be significant salvage value, we do not have enough information to confirm that the salvage value will be as great as this estimate. Therefore the Council will base this order on the conservative assumption that net restoration cost is \$400,000, without credit for salvage.

NWN provided its annual financial report for 2000, and the order approving amendment 6 references Annual Financial Reports for 1997, 1996 and 1995. NWN showed net operating revenue of \$257 million in 2000, which is an increase from revenues in 1997, 1996, 1995. NWN has paid increased dividends per share each year for 45 years.

These reports show that NWN would be able to secure a bond or comparable security to secure restoration costs of \$400,000.

Conclusion: The Council find that NWN is reasonably likely to be able to secure a bond or comparable security to secure any incremental site restoration costs resulting from amendment 8. The mandatory conditions at OAR 345-027-0020(8) and (9) shall apply.

7. 345-022-0060 Fish and Wildlife Habitat

To issue a Site Certificate, the Council must find that the design, construction, operation and retirement of the facility, taking into account mitigation, is consistent with the fish and wildlife habitat mitigation goals and standards of OAR 635-415-0030.

Discussion: OAR 635-415-0030 describes six categories of habitat in order of their value. The rule then establishes mitigation goals and corresponding implementation standards for each habitat category. Habitat Category 1 is habitat of greatest value, and category six is habitat of least value.

Construction-related Impacts: The amendment primarily involves the installation of new equipment at Miller station. In the order approving amendment 6 the Council noted that:

“Activities at Miller Station will have an insignificant effect on fish and wildlife habitat, as they will occur adjacent to existing structures within the fenced area that has already been cleared of vegetation.”

The activities associated with amendment 8 are consistent with this assessment. The biological surveys performed in support of amendment 6 were based on the four habitat categories in effect at the time rather than the present six. However, even with the six categories described in the current rule, Miller station is of low habitat value because the station is fenced, most of the site is paved with gravel or covered with buildings, and there is continuous human activity in the area.

NWN has classified the surrounding forests adjacent to Miller Station as category 4. This area sustains no impact as physical construction will be inside the plant fencing, nor will there be additional impacts associated with the operation. NWN also estimates that the noise levels with the additional compression will be approximately the same as current levels. The Council notes that in its calculation of carbon dioxide emissions, NWN estimates that the new compressor will operate 21 days per year. Therefore, the assumption that noise levels will generally not change appears reasonable.

NWN has classified Miller Station as Category 6 due to the industrial nature of the site. The area inside the fence is void of vegetation, rocky, and has buildings. No new gathering lines are proposed, and the new injection/withdrawal well is located at a previously approved well site.

Conclusion: Because all the new equipment proposed by amendment 8 will be installed either at Miller station or at an existing well site, the amendment will not appreciably impact habitat. The Council finds amendment 8 meets its Fish and Wildlife Habitat standard without additional conditions.

8. 345-022-0070 Threatened and Endangered Species

To issue a Site Certificate, the Council, after consultation with appropriate state agencies, must find that:

- (1) For plant species that the Oregon Department of Agriculture has listed as threatened or endangered under ORS 564.105(2), the design, construction, operation and retirement of the proposed facility, taking into account mitigation:
 - (a) is consistent with the protection and conservation program, if any, that the Oregon Department of Agriculture has adopted pursuant to ORS 564.105(3); or
 - (b) if the Oregon Department of Agriculture has not adopted a protection and conservation program, is not likely to cause a significant reduction in the likelihood of survival or recovery of the species; and
- (2) For wildlife species that the Fish and Wildlife Commission has listed as threatened or endangered under ORS 496.172(2), the design, construction, operation and retirement of the proposed facility, taking into account mitigation, is not likely to cause a significant reduction in the likelihood of the survival or recovery of any threatened or endangered species.

Discussion: NWN is proposing to install new equipment at Miller Station and a new injection/withdrawal well at an existing well site. The site for this amendment was previously studied under NWN's requests for amendments 4 and 6. NWN consulted the Oregon Natural Heritage Program and confirmed that there are only two listings for the township, range, and section surrounding Miller Station. The two listings are the red legged frog and coho salmon, both of which were listed in 1999. There have been no additional listings since 1999.

Studies submitted in support of Amendment 6 in 1999 found no plant species listed as endangered or threatened under ORS 564.105(2) in the area of Miller station or the well site.

These studies also found that no wildlife species listed as endangered or threatened under ORS 496.172(3) regularly occur in, or significantly use, Miller station or the well site proposed for the new injection/withdrawal well.

Conclusion: No relevant conservation programs exist. The site for the new compressor and proposed injection/withdrawal were both studies for endangered species impact in support of Amendment 6 and were found acceptable. The Council finds that the modifications authorized under amendment 8 comply with its Threatened and Endangered Species Standard. No new conditions are required.

9. 345-022-0080 Scenic and Aesthetic Values

To issue a Site Certificate, the Council must find that the design, construction, operation and retirement of the facility, taking into account mitigation, is not likely to result in significant adverse impact to scenic and aesthetic values identified as significant or important in applicable federal land management plans or in the local land use plan for the analysis area.

Discussion: There is no federally owned land in the vicinity of the gas storage facility. The applicable local land use plan is Columbia County's Comprehensive Plan. It contains an inventory

of five "County Scenic Resources." The well site is not visible from any of the resources listed in the county plan.

The plan identifies portions of Highway 47 as a designated scenic highway. Miller Station is visible from two points along Highway 47. The new compressor will be housed in existing structures permitted under amendment 4. Other ancillary equipment will be next to adjacent equipment and will not change the overall appearance of the station, particularly from the highway. Therefore, the amendment will not have a significant adverse impact on important scenic values.

Conclusion: The Council finds that amendment 8 meets the Scenic and Aesthetic standard. No additional conditions are required.

10. 345-022-0090 Historic, Cultural and Archaeological Resources

To issue a site certificate, the Council must find that the construction, operation and retirement of the facility, taking into account mitigation, is not likely to result in significant adverse impacts to:

- (1) Historic, cultural or archaeological resources that have been listed on, or would likely be listed on the National Register of Historic Places;
- (2) For a facility on private land, archaeological objects, as defined in ORS 358.905(1)(a), or archaeological sites, as defined in ORS 358.905(1)(c); and
- (3) For a facility on public land, archaeological sites, as defined in ORS 358.905(1)(c).

Discussion: No previously recorded archeological sites have been identified in the project area. An archeologist surveyed the project area on June 26, 1998 in support of amendment 6. The archeological survey well sites associated with that amendment did not identify any cultural resources. In its order approving amendment 4, the Council found no archeological resources within Miller Station, where the new equipment will be installed.

Conclusion: The Council finds that the amendment meets the Historic, Cultural and Archeological Resource standard. The monitoring and mitigation plan that was approved and added as a site certificate condition under amendment 6 will continue to apply. Therefore no additional conditions are required.

11. 345-022-0100 Recreation

To issue a site certificate, the Council must find that the design, construction and operation of a facility, taking into account mitigation, is not likely to result in a significant adverse impact to important recreational opportunities in the analysis area. The Council shall consider the following factors in judging the importance of a recreational opportunity:

- (1) Any special designation or management of the location;
- (2) The degree of demand;
- (3) Outstanding or unusual qualities;
- (4) Availability or rareness;
- (5) Irreplaceability or irretrievability of the opportunity.

Discussion: NWN evaluated recreation impacts within a five-mile radius of the proposed site in 1999 in support of amendment 6. Recreation opportunities included sites and facilities identified

by Columbia County and fishing and hunting throughout the area. In the 1999 order approving amendment 6, the Council stated that:

“The Columbia County Forests, Parks and Recreation Master Plan identifies 20 county parks, forests, forest/parks and boat dock facilities and another 20 public and private facilities that provide recreational opportunities. None are within five miles of the proposed site of the gas storage facility expansion.

Columbia County plans to develop bicycle trails in the future. However, gas storage construction activity will be complete by late 2000, several years before the County plans to develop the closest bicycle trail.

The gas storage project is within a major big game habitat area. The area is used for hunting elk, deer, pheasant, grouse and bear. The project could result in a localized, short-term impact to hunting during construction, and some habitat loss or alteration over a longer term. However, the project site does not provide recreation opportunities that are unusual or unique, and the Office does not consider these impacts to recreation to be significant. Miller Station is not adjacent to a river or stream and the proposed locations for the gathering lines are not near and do not cross any river or stream. Thus, the proposed gas storage facility expansion will have no effect on streams or fishing activity.

For these reasons, the gas storage facility expansion is not likely to result in a significant adverse impact to important recreation opportunities.”

NWN consulted with the Director of Forest, Parks and Recreation for Columbia County, who confirmed that there have been no recreational resources under Columbia County jurisdiction added since 1999.

Conclusion: In approving amendment 6, the Council found that the NWN Phase 3 storage expansion did not result in a significant adverse impact to important recreational opportunities in the area. Amendment 8 affects only areas addressed under amendment 6. No new recreational resources have been identified since then. The Council concludes that the findings of compliance from amendment 6 remain valid. No new conditions are required.

12. 345-022-0110 Socio-Economic Impacts

To issue a Site Certificate, the Council must find that:

“ the construction and operation of the facility, taking into account mitigation, is not likely to result in significant adverse impact to the ability of communities within the study area to provide the following governmental services: sewers and sewage treatment, water, stormwater drainage, solid waste management, housing, traffic safety, police and fire protection, health care and schools.”

Discussion: The socio-economic study area for the gas storage facility expansion is 30 miles from the site boundary. Potential providers of governmental services in the study area include Columbia and Clatsop Counties and incorporated cities and towns, including Vernonia and Clatskanie. Amendment 8 would authorize new equipment at Miller Station and one new injection/withdrawal at a location previously authorized under amendment 6.

Sewers and Sewage Treatment: No community in the area provides sewers or sewage treatment to the existing gas storage facility or to the surrounding area. Miller Station relies on its own on-site sewage disposal systems. The additional compressor and well would not require more operational personnel or an increase in wastewater requiring sewage treatment. The station will continue to rely on its on-site sewage treatment systems. For these reasons the expansion is not likely to result in an adverse impact on local communities' sewers or sewage treatment facilities.

Water: No community in the area provides water to the existing gas storage facility or to the surrounding area. Water for Miller Station is obtained from existing groundwater wells. The expanded station will continue to meet its water needs from these wells. For these reasons the expansion is not likely to result in an adverse impact on local communities' ability to provide water.

Stormwater Drainage: No community in the area provides stormwater management to the existing gas storage facility or to the surrounding area. The proposed changes to Miller Station would occur within the existing fenced site and would not increase stormwater runoff.

Solid Waste Management: No community in the area provides solid waste management services to the existing gas storage facility or to the surrounding area. NWN will contract with local service companies to remove and dispose the solid waste from installation of the new compressor and well. For these reasons, the expansion is not likely to result in an adverse impact on local communities' ability to provide for solid waste management.

Housing: NWN estimates a workforce of about 60 during the peak of construction. NWN anticipates that fewer than 50 percent of these would require temporary housing. There are communities within a 30-mile commute distance, such as Vernonia, Clatskanie and St. Helens in Oregon, and Longview and Kelso in Washington, that together have several hundred motel rooms. Amendments 4 and 6 involved greater amounts of construction with larger work forces, and local communities, when invited to comment, did not identify housing as a problem.

Traffic Safety: The only impact to traffic will be during construction. The proposed amendment involves less construction over a shorter period of time than amendments 4 and 6, in which gathering lines were installed in addition to Miller station improvements. The Council is not aware of traffic safety problems during those projects. Local communities such as the City of Vernonia and the Mist-Birkenfeld rural fire protection district have commented in favor of the project and did not express concern regarding traffic impacts.

Police and Fire Protection: Columbia County Sheriff's Department provides police protection for the gas storage facility area. The department indicates that the existing storage facility has not caused major problems for law enforcement. The department has commented that neither construction nor operation of the expanded facility should pose problems for law enforcement.

The Mist-Birkenfeld Rural Fire Protection District provides fire protection services in the gas storage area. The expansion would pose little additional fire hazard in the area. NWN has operated its existing underground gas storage facility for about ten years without causing any fires or other hazards. The wellheads have safety features including relief valves and automatic shutdown systems. NWN's trained personnel monitor the gas storage facilities from Miller Station. In 1996 the PUC inspected Miller Station and found it in full compliance with applicable pipeline safety regulations of the U.S. Department of Transportation. In addition, the Mist-

Birkenfield fire district believes that the proposed expansion will not adversely affect the district's ability to provide fire protection. For these reasons, the expansion is not likely to result in a significant adverse impact on the ability of local communities to provide police or fire protection.

Health Care: As noted above, the construction for this amendment would require approximately 60 short-term workers, and the operation of the expanded facility will require no increase in the current on-site personnel. This is comparable to the number of construction workers needed for amendment 6, and less than the workforce for the South Mist Pipeline Extension. In the order approving amendment 6, the Council noted that the construction activities required are similar to those that already occur in the Mist area as a result of recent and on-going exploration for, and production of, natural gas. The construction proposed under amendment 8 would place few additional demands on health care facilities that serve the area.

Schools: As noted above, NWN estimates approximately 60 workers during the peak construction period, of which 50% would be local. This workforce would be short-term and is not larger than the workforce needed for amendment 6. NWN noted that a small community such as Mist could not accommodate as many as 15 additional students. However, NWN has also anticipated (above) that out-of-town workers will seek temporary housing in communities such as Vernonia, St. Helens and Rainier, which offer more temporary housing and are better able to accommodate the additional students. Therefore, this amendment should not have a significant adverse effect on the communities' ability to provide schooling.

Conclusion: The Council finds that the new equipment under amendment 8 is not likely to result in a significant adverse impact to the ability of communities within 30 miles of the site to provide any of the government services listed in the rule. No new conditions are required.

13. 345-022-0120 Waste Minimization

This standard provides that:

- (1) To the extent reasonably practicable, the applicant shall minimize generation of solid waste and wastewater in the construction, operation, and retirement of the facility, and when solid waste or wastewater is generated, recycle and reuse such wastes.
- (2) To the extent reasonably practicable, the accumulation, storage, disposal and transportation of waste generated by the construction and operation of the facility must have minimal adverse impact on surrounding and adjacent areas."

Discussion: In amendments 4 and 6, NWN described a plan to minimize the generation of solid waste, waste water and the use of water, and to reuse or recycle solid waste and waste water. The applications for those amendments list the solid wastes expected from construction and describe NWN's existing recycling program. The wastes expected are the same as for Amendments 4 and 6 and the same plans would apply.

During operations, NWN will operate essentially the same types of equipment being operated currently. Any change in waste production from the existing facility as a result of this proposed amendment would therefore be incremental. NWN will continue to follow the recycling and waste minimization measures currently used at Miller Station, as required by a condition in Amendment #4.

The compression and natural gas treatment operations at Miller Station do not require continuous use of water. No gathering lines are proposed, so only minimal water would be needed for pressure testing.

NWN uses a recycling and reuse program to minimize waste at its existing facility. The modifications proposed by amendment 8 would not significantly increase the production or solid waste or waste water on a continuous basis. NWN has committed to a recycling and disposal program for construction wastes. The program was added as a condition in Amendment #4. The program includes:

(a) Construction waste materials will be transported to an appropriate recycling facility, or to a nearby sanitary landfill for nonrecyclable goods. Scrap steel and welding rod will be collected and transported to a recycling facility. Silt fence material and straw bales will be transported to a local landfill.

(b) Nonhazardous wastes associated with the Project such as crankcase oil, triethylene glycol and oil/water separator oils will be collected, transported and recycled by a vendor as bunker fuel. Oily rags and oil filters will be incinerated off site by a permitted disposal facility. Granular activated carbon will be collected and sent to a permitted facility for regeneration.

(c) Waters used for pressure testing will be disposed of in a manner consistent with requirements specified in approved permits.

Conclusion: The waste minimization and recycling plans described in amendments 4 and 6 are already incorporated into conditions on the site certificate. Those conditions apply to Amendment 8 as well. With these conditions, the proposed amendment meets the Council's waste minimization standard. No further conditions are required.

14. 345-022-0130 Retirement

To issue a Site Certificate, the Council must find that the site, taking into account mitigation, can be restored adequately to a useful, non-hazardous condition following facility retirement.

Discussion: The amendment authorizes the installation of equipment similar to what is currently on the site. In its order approving amendment 6, the Council stated:

“NWN does not foresee retirement of the underground storage facility. However, the Application describes steps NWN would take if the facility were retired.

Pipelines associated with the proposed expansion would be retired in the same manner as existing ones. NWN would inspect pipelines for hazardous materials and would remove any hazardous materials. The above ground portions of the pipelines would be removed and the remaining portion would be capped. The Council concurs that this method would adequately restore the site to a useful, non-hazardous condition and would cause less disruption to the environment than removing the lines.

Injection and monitoring wells would be decommissioned in the same manner as would be done for the existing facility. Restoring the site at Miller Station would not be significantly affected by the proposed expansion. The structures and equipment there are not changed by the proposed modifications. Retirement would involve removing steel prefabricated building, concrete slab foundations, and equipment used for compression and gas

dehydration and treatment. Given these factors, the site of Miller Station can be restored to a useful and safe condition.

Most of the costs of retirement are associated with Miller Station, and are not significantly changed by the Phase 3 expansion. The impact on restoration costs attributable to the Phase 3 expansion is a small fraction of the general retirement costs.”

The equipment proposed for installation in amendment 8 are similar to those proposed for amendments 4 and 6, except that no new gathering lines are proposed. The new compressor proposed for amendment 8 should not significantly affect site retirement, since it is similar to equipment already there. The same is true for the new well proposed for amendment 8. Therefore, the conclusions above remain valid for this amendment.

Conclusion: The Council finds that, as conditioned, the site can be restored to a useful, non-hazardous condition. Conditions adopted under amendments 4 and 6 regarding facility retirement remain in the site certificate and continue to apply. The mandatory condition at OAR 345-027-0020(9) requiring a financial mechanism for facility retirement shall apply to amendment 8.

B. Standards in OAR 345 Division 24

1. OAR 345-024-0030 Public Health and Safety

This standard has four parts, as follows:

(1) The proposed facility is located at distances in accordance with the schedule below from any existing permanent habitable dwelling:

(a) Major facilities, such as compressor stations, stripping plants and main line dehydration stations -- 700 feet;

(b) Minor facilities, such as offices, warehouses, equipment shops and odorant storage and injection equipment -- 50 feet;

(c) Compressors rated less than 1,000 horsepower -- 350 feet;

(d) Roads and road maintenance equipment housing -- 50 feet;

(2) The applicant can construct and maintain the facility in accordance with the applicable requirements of the U.S. Department of Transportation as set forth in 49 CFR, Part 192, and OAR 860-024-0020 in effect as of the date of this rule;

(3) The applicant has developed a program using technology that is both practicable and reliable to monitor the facility to ensure the public health and safety; and

(4) The applicant can design, construct and operate the facility so as not to produce or contribute to seismic hazards that could endanger the public health and safety or result in damage to property.

In amendments 4 and 6, the Council noted that all facilities listed in part (1) are located at sufficient distances from the nearest permanent habitable dwelling. For this amendment, all new equipment is located at the existing site. Therefore part (1) is met.

Part (2) is met because NWN will comply with Federal regulations in 49 CFR 192. The Oregon PUC administers and inspects for compliance with these rules under a delegation from the Federal government. PUC inspection reports provided in support of amendments 4 and 6 and the application for the South Mist Pipeline indicate that both facilities comply.

Part (3) is met because NWN will design, construct and operate the modifications proposed under amendment 8 in accordance with federal safety regulation enforced by the PUC. The regulations require measures to prevent leakage, including factory- installed pipeline coating, individual joint wrap, cathodic protection and insulation from other pipes that could cause inadvertent electrical contact. The wellhead and pipeline facilities' safety features include relief valves and automatic shutdown systems. An Emergency Shutdown system is in place that can be either manually or automatically activated. It stops all active plant process, closes all plant inlet and outlet valves, shuts off the engine fuel and start gas systems and, upon closure of necessary valves, vents to atmosphere all process and fuel gas within the plant. As methane is lighter than air, the safe location is to vent vertically. These systems are maintained on a regular basis and tested at least annually to assure proper response. Systems are in place to monitor compressor pressure and control building atmosphere for the presence of flammable vapors as well as systems that detect the presence of a fire. These instruments will trigger an alarm or plant shutdown when certain preset levels are reached. The plant has a staff of seven operators and maintenance personnel working rotating shifts. A communication link is maintained between the plant and the NWN Operations control room in Portland.

Under Amendment #4, NWN expanded its Emergency Plan from the original storage development to include the proposed additional reservoir and equipment associated with the Phase 2 (Calvin Creek) amendment. The Council added this as a condition to the Site Certificate under amendment 4 in 1997, and it will continue to apply.

Part (4) is met because the new equipment proposed under amendment 8 will be located within the existing site, and because we have found, pursuant to the EFSC Structural Standard, that the facility can be designed, constructed and operated to avoid seismic hazards listed in ORS 455.447(1)(d).

Conclusion : The Council finds that amendment 8 meets the safety standards in OAR Chapter 345 Division 24. Because conditions adopted pursuant to this standard under amendment 4 will continue to apply, no new conditions are required.

Carbon Dioxide Offset Standard for Nongenerating Energy Facilities, OAR 345-024-0620

Quotations of the rules have been shortened for brevity.

To issue a site certificate for a nongenerating energy facility that emits carbon dioxide, the Council must find that the net carbon dioxide emissions rate of the proposed facility does not exceed 0.522 pounds of carbon dioxide per horsepower hour. The Council shall determine whether the carbon dioxide emissions standard is met as follows:

(1) The Council shall determine the gross carbon dioxide emissions that are reasonably likely to result from the operation of the proposed energy facility. The Council shall base such determination on the proposed design of the energy facility. In determining gross carbon dioxide emissions for a nongenerating facility, the Council shall calculate carbon dioxide emissions for a 30-year period unless the applicant requests, and the Council adopts in the site certificate, a different period. ***

(2) For any remaining emissions reduction necessary to meet the applicable standard, the applicant may elect to use any of the means described in OAR 345-024-0630, or any combination thereof. ***

(4) Before beginning construction, the certificate holder shall notify the Office of Energy in writing of its final selection of an equipment manufacturer and shall submit a written design information report to the Office sufficient to verify the facility's designed rate of fuel use and its nominal capacity for each fuel type. In the site certificate, the Council may specify other information to be included in the report. The Office shall use the information the certificate holder provides in the report as the basis for calculating, according to the site certificate, the amount of carbon dioxide emissions reductions the certificate holder must provide under OAR 345-024-0630;

(5) In the site certificate, the Council shall specify the schedule by which the certificate holder shall provide carbon dioxide emission offsets. In the schedule, the Council shall specify the amount and timing of offsets the certificate holder must provide to a carbon dioxide emissions offset credit account. In determining the amount and timing of offsets, the Council may consider the estimate of total offsets that may be required for the facility and the minimum amount of offsets needed for effective offset projects. The Office shall maintain the record of the offset credit account.

Discussion. There are two key aspects to determining the gross emissions that are reasonably likely to result from the operation of the facility: 1) the likely hours of operation, and 2) the site specific conditions during those likely hours of operation. The latter aspect is also captured in the determination of the nominal capacity, pursuant to section (4). NWN provided supplemental information about hours and site conditions in an e-mail that OOE received on September 19, 2001, from Todd Thomas.

Hours of Operation. The proposed new KC-7 turbine-driven natural gas compressor is a high flow rate, high efficiency, "peaking" machine designed to deliver large volumes of gas at moderate differential pressure. The Mist Storage facility is a peaking resource that allows NWN the flexibility to deliver large volumes of gas during the winter months when demand exceeds the amount of daily contracted pipeline capacity. The ultimate capacity of Miller Station is about 425 mmcf/d.

NWN developed a flow model using historical operating data. The demand for additional compression is confined to a short period of time, which NWN's flow model identified as about 14 days annually. However, to be conservative, NWN proposed to meet the carbon dioxide standard on an assumed annual use of 21 days, or 504 hours.

The need for peak supplies occurs during the withdrawal season. NWN reports that the first six days of its design model is typical of what it experiences during extremely cold weather, which it calls an "arctic outbreak." All available compression is required to meet the peak send out. The other eight days model the return to more normal, but cold winter weather, and a send out of 140 mmcf/d at moderate differential pressure. The model then shows the remaining withdrawal needs being met with the existing equipment. The KC-7 equipment compresses approximately

2.4 billion cubic feet of gas during the 14-day period. This is approximately 23 percent of the total 10.5 billion cubic feet working gas inventory.

The flow model indicates all of the compressed injection needs are met with the existing equipment because of the high differential pressure and low injection rates.

Site Conditions and Nominal Capacity. The nominal capacity of a gas turbine is affected by the relative humidity, inlet temperature and barometric pressure during the times the turbine is likely to operate. The altitude of the site is 1,050 feet. In the supplemental information it provided on September 19, 2001, NWN specified the site conditions as 60 percent humidity, 40 degrees Fahrenheit, and 14.147 psia. Under those conditions, the fuel flow will be 57.8155 million Btu/hr and the nominal shaft horsepower will be 7,324.

The Council will adopt conditions requiring NWN to submit the information identified in section (4). The final calculation of required carbon dioxide offsets and the monetary path payment requirement will be based on the information NWN submits pursuant to those conditions.

Carbon Dioxide Emissions and Required Offsets. NWN did not propose an alternative analysis period for determining emissions, pursuant to section (1), so the calculations are for a deemed 30-year period. Gross carbon dioxide emissions from use of the new compressor are 51,139 tons. Allowable net emissions under the standard are 28,902 tons. Therefore, NWN must provide offsets for 22,237 tons of carbon dioxide.

NWN proposed to provide offsets by providing monetary path payments to The Climate Trust, which is a qualified organization under the monetary path. The Council has found that The Climate Trust is a qualified organization, pursuant to OAR 345-001-0010(45), as recently as September 14, 2001. The Council finds that The Climate Trust remains a qualified organization.

Table 1 shows the calculation of the monetary path payment requirement for the proposed compressor operating under the conditions NWN identified. In order to ensure adequate selection and contracting funds, OOE recommended that the Council set the rate for calculating selection and contracting funds at 20 percent of the first \$250,000 in offset funds and 4.286 percent of the value of any offset funds in excess of that amount. OOE further recommended that the Council not set a specific minimum payment amount for selection and contracting funds, pursuant to OAR 345-024-0710(4).

NWN proposed to make the entire initial monetary path payment to The Climate Trust in one cash payment prior to beginning construction. By doing so, NWN will have provided the full amount of the initial estimated offsets to the offset credit account. OOE recommended that the Council adopt conditions to incorporate NWN's proposed payment schedule, pursuant to section (5) and OAR 345-024-710. OOE will maintain the offset credit account, pursuant to section (5).

Table 1. Monetary Offset Path for New Compressor

Nominal power (hp)	7,324
Fuel	natural gas
Average time on fuel (hr/yr.)	504
Heat rate (Btu/hp-hr)	7,894
Natural gas CO ₂ rate (lb/MMBtu)	117
CO ₂ emissions rate	0.924
Standard (lb./hp-hr)	0.522
Excess CO ₂ emission rate	0.402
Annual energy hp-hr	3,691,195
Years	30
Annual CO ₂ emissions (tons)	1,705
Total excess emissions (tons)	22,237
Monetary offset rate	\$ 0.85
Offset fund	\$ 18,901
Selection and contracting fund at 20%	\$ 3,780
Total monetary path payment requirement	\$ 22,682

Means of Compliance for Nongenerating Energy Facilities, OAR 345-024-0630

The applicant may elect to use any of the following means, or any combination thereof, to comply with the carbon dioxide emissions standard for nongenerating energy facilities:***

(2) Providing offset funds, directly or through a third party, in an amount deemed sufficient to produce the reduction in carbon dioxide emissions necessary to meet the applicable carbon dioxide emissions standard according to the schedule set forth pursuant to OAR 345-024-0620(5). The applicant or third party shall use the funds as specified in OAR 345-024-0710. The Council shall deem the payment of the monetary offset rate [\$0.85], pursuant to OAR 345-024-0580, to result in a reduction of one ton of carbon dioxide emissions. The Council shall determine the offset funds using the monetary offset rate and the level of emissions reduction required to meet the applicable standard. If the Council issues a site certificate based on this section, the Council may not adjust the amount of the offset funds based on the actual performance of offsets;***

(4) Each year after beginning commercial operation, the certificate holder shall report to the Office data showing the amount and type of fossil fuels used by the facility and its horsepower-hours of operation. The Council shall specify in the site certificate how the Office shall use those data to calculate the gross carbon dioxide emissions from the facility during the report year and the net emissions in excess of the carbon dioxide emissions standard. The Office shall then subtract excess emissions from the carbon dioxide emissions offset credit account. The Council shall specify in the site certificate the minimum amount of carbon dioxide offset credits that a certificate holder shall provide to establish the offset credit account. The Council may specify an amount of offset credits equal to the total offsets required for the facility. The Council shall specify the minimum amount of carbon dioxide offset credits that a certificate holder must maintain in the account and the minimum amount of carbon dioxide offset credits the certificate holder shall provide to replenish the account. The Office shall notify the certificate holder when it must replenish its offset credit account according to the conditions in the site certificate. The

certificate holder shall maintain a positive balance in the offset credit account for 30 years, unless the Council specifies a different period in the site certificate;

(5) If the certificate holder is replenishing its offset credit account by meeting the monetary path payment requirement described in OAR 345-024-710, the certificate holder may replenish its offset credit account without amending the site certificate by using the calculation methodology detailed in conditions that the Council adopts in the site certificate;***

Discussion. The initial monetary path payment requirement, pursuant to section (2), is discussed above and shown in Table 1. Section (4) of this rule addresses future offsets that may be required, based on the actual operation of the new compressor over 30 years. NWN proposed that, as a matter of convenience, the Council excuse it from the obligation of potentially having to replenish its offset credit account. The Council cannot, however, excuse a site certificate holder from the application of its rules as a matter of convenience.

NWN has stated that it reasonably expects to operate the new compressor for 6 percent of the time and under certain conditions. However, over 30 years the actual operation may vary from the forecast operation. The rules are designed to accommodate a great deal of flexibility in actual operation without requiring a new amendment. The rules require a yearly reporting of actual emissions and tracking of an offset credit account. The rules further provide that a certificate holder must maintain a positive balance in the offset credit account. In the site certificate, the Council must specify the minimum balance and the minimum amount by which the certificate holder must replenish the offset credit account.

OOE recommended that the Council adopt a condition that sets the minimum balance in the offset credit account at 2,000 tons, which is about 10 percent of the total initial estimated offset credit account. It also recommended that the Council adopt a condition that specifies that NWN shall replenish the offset credit account based on the average of its excess emissions during the prior three years times the number of years remaining in the deemed 30-year life of the facility. OOE also recommended that the Council adopt a condition that requires NWN, within 30 days of notification, to replenish the offset credit account for the full amount of estimated offset required for excess emissions during the remaining life of the facility.

Monetary Path Payment Requirement, OAR 345-024-0710

(1) If the applicant elects to meet the applicable carbon dioxide emissions standard in whole or in part under *** OAR 345-024-0630(2), (4) and (5), the applicant shall provide a bond or comparable security in a form reasonably acceptable to the Council to ensure the payment of the offset funds and the additional funds required under section (4). The applicant shall provide such security by the date specified in the site certificate. In the site certificate, the Council shall specify a date no later than the commencement of construction of the facility for base load gas plants and non-base load power plants. For nongenerating facilities, the Council shall specify a date no later than the commencement of construction of the facility for providing the initial bond or comparable security, and the Council shall specify conditions for providing subsequent incremental payments to meeting the monetary path payment requirement. The certificate holder for a nongenerating facility must meet its incremental monetary path payment requirements before exhausting its offset credit account, as described in OAR 345-024-0630(4). In no case shall the

applicant diminish the bond or comparable security or receive a refund from a qualified organization based on the calculations of the facility's emissions on a new and clean basis for a fossil-fueled power plant or any other measure for a nongenerating energy facility. A qualified organization shall not refund any offset funds to a certificate holder based on the operation or performance of a non-base load power plant during any five-year period reported under OAR 345-024-0590(5) or, for a nongenerating facility, on any offset credits the certificate holder provided under OAR 345-024-0620(5).

(2) In the site certificate, the Council shall require the certificate holder to disburse the offset funds and other funds required as specified in sections (3) and (4), unless the Council finds that no qualified organization exists, in which case the Council shall require the certificate holder to disburse the offset funds as specified in OAR 345-024-0720(2).

(3) When the certificate holder receives written notice from the qualified organization certifying that the qualified organization is contractually obligated to pay any funds to implement offsets using the offset funds, the certificate holder shall make the requested amount available to the qualified organization unless the total of the amount requested and any amounts previously requested exceeds the offset funds, in which case the certificate holder shall make available only the remaining amount of the offset funds. The qualified organization shall use at least 80 percent of the offset funds for contracts to implement offsets. The qualified organization may use up to 20 percent of the offset funds for monitoring, evaluation, administration and enforcement of contracts to implement offsets.

(4) At the request of the qualified organization and in addition to the offset funds, the certificate holder shall pay the qualified organization an amount equal to 10 percent of the first \$500,000 of the offset funds and 4.286 percent of any offset funds in excess of \$500,000. The certificate holder for a base load gas plant shall pay not less than \$50,000, unless the Council specifies a lesser amount in the site certificate. In the site certificate, the Council may specify a minimum amount that other fossil-fueled power plants or nongenerating energy facilities must pay. This payment compensates the qualified organization for its costs of selecting offsets and contracting for the implementation of offsets.

(5) Notwithstanding any provision to the contrary, a certificate holder subject to this rule has no obligation with regard to offsets, the offset funds or the funds required by section (4) other than to make available to the qualified organization the total amount required under *** OAR 345-024-0630(2), (4) and (5), and section (4) of this rule. The Council shall not base a revocation of the site certificate or any other enforcement action with respect to the certificate holder on any nonperformance, negligence or misconduct by the qualified organization.

(6) For monetary path payments a certificate holder must make before beginning construction, the certificate holder shall make all offset fund payments and all payments required by section (4) to the qualifying organization in real dollars of the year in which the Council issues a final order applying the carbon dioxide emissions standard to the energy facility. In the site certificate, the Council shall specify an appropriate inflation index for calculating real dollars. For a non-base load power plant, if a certificate holder must make a payment as described in OAR 345-024-0600(4), the certificate holder shall make a payment that has the same present value per ton of carbon dioxide as the monetary path offset rate of the year in which the Council issued the final order applying the carbon dioxide standard. In the site certificate, the Council shall specify the methodology for calculating present value. If the certificate holder of a nongenerating facility must make payments as described in OAR 345-024-0630(4) and (5), the Council shall specify in

the site certificate the method for calculating the rate for the dollar value per ton of carbon dioxide offsets required according to subsection (a) or (b) below:

(a) Unless the applicant and the Council agree to the methodology in subsection (b), the certificate holder shall make payments that have the same present value per ton of carbon dioxide as the monetary path offset rate of the year in which the Council issued the final order applying the carbon dioxide standard. The Council shall set an appropriate discount rate for calculating the present value, using the cost of capital most recently approved by a state utility regulatory commission for that utility or a similar utility as a guide; or

(b) If the applicant requests and the Council agrees, the certificate holder shall make payments at the monetary path offset rate in effect on the date the certificate holder makes the payment.

Discussion. NWN proposed to meet its monetary path payment requirement by providing cash to The Climate Trust for the full amount prior to beginning construction. Therefore, there is no need for a bond or comparable security (section 1) to secure the offset funds during the period between beginning construction and The Climate Trust requesting offset funds, pursuant to section (3). OOE recommended that the Council adopt a condition that requires NWN to make a full cash payment of the monetary path payment requirement to The Climate Trust prior to beginning construction. OOE also recommended that the Council adopt a condition that requires NWN to provide supplemental monetary path payments in full within 30 days of notification by OOE that NWN needs to replenish its offset credit account.

Section (6) provides two alternatives for calculating the present value of a ton of carbon dioxide if the certificate holder must replenish its offset credit account. NWN did not propose to use subsection (b), which would apply future monetary offset rates.

Therefore, sub-section (a) applies to this amendment. Pursuant to that sub-section, the Council must set an appropriate discount rate for calculating the present value, using the cost of capital most recently approved by the Oregon Public Utility Commission ("PUC"). The PUC most recently approved a cost of capital for NWN in PUC Order 99-697, entered November 12, 1999, page 24. It states: "Using this figure (a cost of common equity of 10.25 percent) in connection with other capital costs and the company's capital structure yields a rate of return for NW Natural of 8.91 percent." "Cost of capital" as used in the Council's rule refers to the average weighted cost of capital for a utility and is commonly called the utility's "rate of return." This is a weighted mix of the return on equity on common stock and the interest costs of other capital (bonds, other loans and preferred stock). OOE recommended that the Council adopt a condition that incorporates this rate into the calculation of the present value of future offset fund payment requirements.

Conclusion. The Council find that the new compressor meets the carbon dioxide standard for nongenerating energy facilities with the conditions set forth in this order.

C. Requirements of Other Agencies

Amendment 8 requires no permits under EFSC jurisdiction, other than the site certificate amendment.

Operation of the new compressor may affect NWN's Air Contaminant Discharge Permit. However, the Department of Environmental Quality administers that permit under a delegation from the federal government.

Under the EFSC General Standard of Review, the facility must meet the noise standards at OAR 340 Division 35. In the order approving amendment 6, the Council stated:

“*** noise studies performed by NWN demonstrate that the facility complies with noise standards in OAR 340 Division 35. The pipelines and wells do not produce appreciable noise. Noise from Miller Station will not increase if phase 3 is permitted.

NWN conducted noise testing on July 27 and 28, 1998. Noise measurements were taken at night, when background noise is at a minimum. The compressors at Miller Station were operating at nearly full capacity during the test. Measured noise levels were far below the allowable levels from Table 8 of OAR 340-35-035. The noise was measured at the nearest noise sensitive location, a habitable dwelling located approximately 6100 feet from Miller station. Noise was well below the levels allowed by OAR 345-35-035, and in fact was below the levels measured prior to construction in February 1997.***”

NWN estimates that the new compressor proposed for amendment 8 would produce sound pressure at the nearest noise sensitive receptor of less than 30 dB. When added to the existing baseline noise level (which includes the currently installed equipment at Miller station), this will not increase noise levels at the nearest noise sensitive receptor by 10 dB. Therefore the project meets the requirement of OAR 354-035-0035. This outcome appears likely in light of the fact that noise measurements taken after the installation of new compressors in July 1998 were not perceptively different from baseline measurements taken before that construction.

Therefore the Council finds that amendment 8 meets the noise regulations of OAR 340. However, the Council will add a condition requiring post-installation noise measurements utilizing the same measurement protocols as the 1998 measurements. These measurements should be taken within six months of the initial operating date of the new compressor authorized under amendment 8. The condition will include a six month window so that NWN can select a date with weather and wind conditions reasonably close to the conditions that existed on the date of the July 1998 measurements.

V. Issues Raised in Public Comment

OOE issued public notice of NWN's application and requested public comment by September 15, 2001. OOE received no comments from the public or other agencies concerning this amendment request. OOE also issued notice of the Proposed Order on September 21, 2001, which stated that it would accept public comments until October 22, 2001. No member of the public commented, but NWN did comment on October 16, 2001.

In its comments, NWN requested that EFSC select June 2002 as the date for project completion required by mandatory conditions pursuant to OAR 345-027-0020, rather than the March date that OOE recommended in the Proposed Order. The Council will adopt this condition with a June 1, 2002 date for project completion.

NWN also requested that the Final Order clarify that certain construction related activities do not require an amendment because they are already authorized under the existing Site Certificate as

previously amended. NWN stated that they have done foundation work in anticipation of this amendment, that this foundation work does not require an amendment because it is on the existing site. It is already allowed under the existing site certificate, and all foundation work complied with the amendment 6 construction conditions related to the council's Structural and Soil standards. The Council agrees that foundation work is permitted under the existing site certificate, so long as it does not violate a site certificate condition or increase the facility's maximum daily throughput. By letter dated October 26, 2001, NWN confirmed its commitment to include any such foundation work in the site restoration that is required under the site certificate through amendment 7.

NWN also requested a change to the post-installation noise testing requirements recommended in the proposed order, because it is impractical to operate all installed equipment at the same time. The compressor authorized under amendment 8 is a high-volume, low- pressure compressor intended for quick gas withdrawal on cold days. The compressors installed prior to amendment 8 are high-pressure compressors intended for injection. It is possible to run all compressors on a peak cold day, but there is no assurance that such a day will occur. It is unlikely that all compressors will operate except on rare occasions. Therefore OOE recommended that NWN test only the new compressor, rely on existing data for the other compressors, and mathematically add the noise data from all compressors to show compliance with the standard. The Council will adopt this condition, with the stipulation that instrument errors must be added to the measured noise and treated cumulatively.

VI. Order and Conditions for the Site Certificate Amendment

The Council finds that the proposed amendment 8 complies with all Council standards and applicable requirements of other agencies, and recommends that the Council amend the Site Certificate to permit construction and operation of the modifications in amendment 8 as described in this Order, which shall be incorporated into the Site Certificate. This recommendation includes the following conditions:

A. Mandatory Conditions under OAR 345 Division 27

The following conditions apply pursuant to OAR 345-027-0020. Some conditions that are listed in OAR 345-027-0020 do not appear below, either because they do not apply or because they are already in the site certificate under a previous amendment.

- (1) The modifications authorized under amendment 8 shall be designed, constructed, operated and retired:
 - (a) Substantially as described in the amended Site Certificate;
 - (b) In compliance with the requirements of ORS Chapter 469, applicable Council rules, and applicable state and local laws, rules and ordinances in effect at the time Amendment No 8 to the Site Certificate is issued; and
 - (c) In compliance with all applicable permit requirements of other state agencies.
- (2) Construction of the modifications authorized under amendment 8 shall begin not later than December 1, 2001 and shall be completed not later than June 1, 2002.
- (3) NWN shall restore vegetation to the extent practicable and shall landscape portions of the area disturbed by construction in a manner compatible with its surroundings and/or proposed future

use. Upon completion of project construction, NWN shall dispose of all temporary structures not required for future use and all timber, brush, refuse and flammable materials or combustible material resulting from the clearing of land or from construction of the facility.

(4) NWN must decommission the new equipment and portion of the facility described in Amendment 8 and restore the site to a useful and non-hazardous condition as provided in OAR 345-022-0130 and the retirement plan previously described in the Order Approving Amendment 4. In addition, immediately upon execution of amendment 8 to the site certificate, NWN must provide EFSC with a surety bond or other form of financial assurance, which shall guarantee NWN's obligation and indemnify the state from any failure by NWN to decommission the new equipment and portion of the facility described in Amendment 8 and restore the site to a useful and non-hazardous condition as provided in OAR 345-022-0130 and the retirement plan previously described in the order approving amendment 4 to the site certificate. The Council delegates authority for approval of the bond to the Council chair. The amount of the bond or financial assurance must be \$400,000 in 2001 dollars. The calculation of 2001 dollars shall be made using the U.S. Gross Domestic Product Implicit Price Deflator, as published by the U. S. Department of Commerce, Bureau of Economic Analysis, or any successor agency (the "Index"). If, at any time, the Index is no longer published, the Council will select a comparable replacement index.

(5) Pursuant to amendment 8, the permitted daily throughput of the facility is 317 million cubic feet per day.

B. Conditions related to EFSC Standards at OAR Chapter 345 Division 22

Structural and Soils Standards

(1) NWN shall design the modifications authorized by amendment 8 in accordance with the seismic design factors shown in Table 2 of GeoEngineers' September 18, 2001 report "EFSC Structural Standard Information, Miller Station Gas Compression Facility, Mist, Oregon."

(2) NWN shall design, engineer and construct the modifications authorized by amendment 8 substantially in accordance with the recommendations in the section entitled "Non-Seismic Design and Construction Recommendations" in GeoEngineers' September 18, 2001 report "EFSC Structural Standard Information, Miller Station Gas Compression Facility, Mist, Oregon."

Waste Minimization

(1) NWN shall transport construction waste materials to an appropriate recycling facility or to an approved sanitary landfill for nonrecyclable goods. NWN shall collect scrap steel and welding rod for transportation to a recycling facility. Silt fence and straw bales shall be transported to an approved landfill.

(2) Nonhazardous wastes associated with the Project such as crankcase oil, triethylene glycol and oil/water separator oils shall be collected, transported and recycled by a vendor as bunker fuel. Oily rags and oil filters shall be incinerated off site by a permitted disposal facility. Granular activated carbon will be collected and sent to a permitted facility for regeneration. NWN may use alternate methods of disposal if approved by the Office of Energy.

Noise Standard (applicable under the General Standard of Review)

(1) Within six months of initial startup of the new compressor authorized by amendment 8, NWN shall conduct noise surveys at the locations previously tested pursuant to amendment 4 to demonstrate compliance with DEQ Noise regulations at OAR 340-035-0035. Sound measurements shall be made with the compressor authorized by amendment 8 running at within 5% of rated horsepower. Measurements shall be made at a time when weather and atmospheric conditions are comparable in terms of sound propagation to the conditions that existed during the measurements taken pursuant to amendment 4. NWN shall mathematically add the sound from this compressor to the sound from compressors installed prior to amendment 8, as measured in the tests required by Amendment 4. NWN shall add instrument error to the noise measurements and shall treat instrument errors as cumulative. NWN shall promptly notify the Office of Energy if the total from this mathematical addition exceeds the limits in Table 8 of OAR 340-035-0035.

C. Conditions Related to Standards at OAR 345 Division 24

Conditions related to public safety

Under ORS 469.401(2), EFSC must impose conditions in the site certificate for the protection of public health and safety. The conditions listed above under the EFSC Structural Standard are there to protect public health and safety. The following conditions protect public health and safety specifically with regard to EFSC standards for surface facilities related to underground natural gas storage and natural gas pipelines.

- (1) NWN shall design, construct, operate and retire the modifications authorized under amendment 8 in accordance with applicable statutes, rules and ordinances.
- (2) NWN shall construct all facilities in accordance with the requirements of the U.S. Department of Transportation as set forth in Title 49, Code of Federal Regulations Part 192.
- (3) NWN shall maintain a program to monitor the facility as modified under amendment 8 to ensure protection of the public health and safety, including but not limited to:
 - (a) Pressure sensing devices positioned at Miller Station and near the wellheads to relay critical information to both Miller station and Portland gas control centers,
 - (b) high and low pressure alarms monitored on a 24 basis to detect and locate areas where pressure variations may indicate abnormal conditions, and
 - (c) emergency response personnel on duty 24 hours per day, at Miller Station or in Portland, trained to respond to situations that require immediate attention.

The program that was described in the request for amendment 6 and that was already maintained as of March 30, 1999 in compliance with subpart L of 49 CFR 192 is hereby found to comply with this condition.

Conditions related to CO2 standard

(1) Immediately upon execution of Site Certificate Amendment 8 authorizing the compressor described in NWN's Request for Amendment 8 ("new compressor"), NWN shall report to Energy Facility Siting Council ("Council") the design and operating parameters of the new compressor, as specified in sub-sections (a) through (c).

(a) NWN shall notify the Council in writing of its final selection of a gas turbine compressor vendor.

(b) NWN shall submit written design information sufficient to verify the new compressor's designed heat rate (higher heating value) and its nominal capacity. NWN shall include an affidavit certifying the heat rate and nominal capacity of the new compressor.

(c) NWN shall specify the estimated annual average hours that it reasonably expects to operate the new compressor.

(2) NWN shall submit all monetary path payment requirement calculations to the Office of Energy ("Office") for verification in a timely manner prior to making payments to The Climate Trust. NWN shall use the contracted design parameters for nominal capacity and heat rate of the new compressor, along with the estimated annual hours of operation, that it reports pursuant to Condition 1 to calculate the estimated monetary path payment requirement. For the purposes of this site certificate, the "monetary path payment requirement" means the offset funds determined pursuant to OAR 345-024-0630 and the selection and contracting funds that NWN must disburse to The Climate Trust, as the qualified organization, pursuant to OAR 345-024-0710 and this site certificate.

(a) The net carbon dioxide emissions rate for the new compressor shall not exceed 0.522 pounds of carbon dioxide per horsepower hour.

(b) The offset fund rate for the monetary path payment requirement shall be \$0.85 per ton of carbon dioxide (in 2001 dollars). For the initial monetary path payment that NWN must make prior to beginning construction, the calculation of 2001 dollars shall be made using the US Gross Domestic Product Implicit Price Deflator, as published by the US Department of Commerce, Bureau of Economic Analysis, or any successor agency ("the index"). The amount of the payment requirement shall increase annually by the percentage increase in the index and shall be pro-rated within the year to the date of disbursement to The Climate Trust from October 26, 2001. If at any time the index is no longer published, the Council shall select a comparable calculation of 2001 dollars.

(c) NWN shall offset excess carbon dioxide emissions using the monetary path as described in OAR 345-024-0710 and this site certificate. Contracting and selecting funds shall equal twenty (20) percent of the value of any offset funds up to the first \$250,000 (in 2001 dollars) and 4.286 percent of the value of any offset funds in excess of \$250,000 (in 2001 dollars).

(3) Immediately upon execution of Site Certificate Amendment 8, NWN shall pay cash to The Climate Trust in the full amount of the monetary path payment requirement (in 2001 dollars) as determined by the calculations set forth in Condition 2.

(4) The Office shall establish an "offset credit account." The initial offset credit account shall be the total carbon dioxide offsets for which NWN has provided offset funds to The Climate Trust, pursuant to Condition 3.

(5) Each year after beginning commercial operation of the new compressor ("annual carbon dioxide reporting period"), NWN shall report to OOE the annual hours the new compressor operated and its fuel use in Btu. NWN shall provide the annual report to the Office within 30 days of the anniversary date of beginning commercial operation of the new compressor.

(a) The Office shall calculate the excess carbon dioxide emissions during each annual carbon dioxide reporting period and subtract those emissions from the offset credit account annually.

(b) If the offset credit account contains fewer than 2,000 tons of carbon dioxide offset credits, NWN shall replenish the offset credit account. NWN shall replenish the offset credit account equivalent to the full amount of the estimated future excess emissions. The Office shall estimate excess emissions for the remaining period of the deemed 30-year life of the facility, based on the average annual excess carbon dioxide emissions in the prior three years. The Office shall calculate the estimated future excess emissions of the new compressor and notify NWN of the amount of payment required, using the monetary path, to replenish the offset credit account.

(c) Notwithstanding the index identified in Condition 2(b), pursuant to OAR 345-024-0710(6)(a) the formula to calculate the rate for the dollar value per ton of carbon dioxide offsets by which NWN shall replenish its offset credit account through the monetary path shall be $\$0.85 \text{ times } (1.0891 \text{ to the power "t"})$; where "t" is the elapsed time in years between October 26, 2001, and the date the Office notifies NWN that it must replenish its offset credit account, pursuant of OAR 345-024-0630(4). Fractional years shall be calculated by dividing the number of elapsed days in excess of a whole year by 365.

(d) The Office shall calculate additional contracting and selection funds pursuant to Condition 2(c).

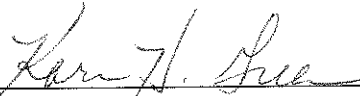
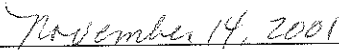
(e) NWN shall disburse in cash the additional monetary path payment requirement to replenish the offset credit account to The Climate Trust within 30 days after notification by the Office of the amount that NWN owes.

(6) The new gas turbine compressor shall be fueled solely with pipeline quality natural gas or with synthetic gas with a carbon content per million Btu no greater than pipeline quality natural gas. The Office shall use a rate of 117 pounds of carbon dioxide per million Btu of natural gas fuel to calculate carbon dioxide emissions.

FINAL ORDER

Based on the above discussions and findings, the Energy Facility Siting Council approves NWN's

Request for Amendment #8. The Council Chair shall execute the site certificate amendment in the form of "Amendment #8 to the Site Certificate for the Mist Underground Natural Gas Storage Facility".

Karen H. Green

date

Chair, Energy Facility Siting Council

Notice of the Right to Appeal

You have the right to appeal this order to the Oregon Supreme Court pursuant to ORS 469.405. To appeal you must file a petition for judicial review with the Supreme Court within 60 days from the day this order was served on you. If this order was personally delivered to you, the date of service is the date you received this order. If this order was mailed to you, the date of service is the date it was mailed, not the day you received it. If you do not file a petition for judicial review within the 60-day time period, you lose your right to appeal.